REMARKS

In response to the Official Action of May 31, 2007, claims 1, 10-15, and 18-22 have been amended and claims 23-33 are newly presented.

The claim amendments are made to correct formal matters and to address the issues regarding non-statutory subject matter for claims 13 and 22.

Claim Rejections - 35 USC §101

As noted, claims 13 and 22 have been amended to recite a computer readable medium in which software code is stored the software code for running in a processing component. Therefore, claims 13 and 22 are believed to recite statutory subject matter.

Claim Rejections - 35 USC §102

At section 5, claims 1, 2, 5-6, 8 and 10-13 are rejected under 35 USC §102(b) as being anticipated in view of US patent application publication 2001/0046877, Ohkubo, et al (hereinafter Ohkubo). With respect to claim 1, it is asserted that Ohkubo describes a method having the actions recited in claim 1.

A response to this rejection follows:

Subject Matter of the Claims

One aspect of the present invention relates to a switch from a point-to-multipoint channel to a point-to-point channel, while another aspect of the present invention relates to a switch from a point-to-point channel to a point-to-multipoint channel.

Amended claim 1 relates to the first aspect of the present invention and comprises:

A. a mobile station determining a link quality of a point-to-multipoint channel based on link quality related measurements on said point-to-multipoint channel, which point-to-multipoint channel is currently used by a mobile communication network for transmitting multicast data; and

B. said mobile station requesting from said mobile communication network the transmission of said multicast data via a point-to-point channel, in case said determined link quality lies below a given link quality.

This first aspect of the present invention is also presented in independent claim 10 directed to a corresponding apparatus for the mobile terminal side, new independent claim 11 directed to a corresponding apparatus for the network side, new independent claim 26 directed to a corresponding method for the network side, independent claim 27 directed to a corresponding apparatus for the mobile terminal side written using means plus function terminology and new independent claim 28 directed to a corresponding apparatus for the network side written using means plus function terminology. All new claims are supported by the original application as filed, including Figures 4 and 5 and the accompanying description at page 14 line 1 through page 18, line 22.

The second aspect of the present invention is set forth in claim 14 which relates to a method comprising:

a. a mobile communication network estimating a link quality of a point-to-multipoint channel.

a1. While transmitting multicast data on a point-to-point channel to a mobile station; and

b. in case said estimated link quality of said point-to-multipoint channel reaches a required link quality, said mobile communication network ordering said mobile station to switch from said point-to-point channel to said point-to-multipoint channel for receiving said multicast data.

The second aspect of the present invention is also set forth in independent claim 19 directed to a corresponding apparatus and independent claim 29 directed to a corresponding apparatus written using means plus function terminology.

The Anticipation Rejection of Claim 1

Regarding claim 1 and the art cited, the Office relies upon Ohkubo. Ohkubo relates to a multicast signal transmission power control method that controls a transmission power of a multicast signal that is transmitted by a base station to a

plurality of mobile stations through a radio link [0002].[1] In multicast communications a multicast signal is simultaneously transmitted from a base station to each of a plurality of specified mobile stations. Such multicast signals, sent by the base station, contain identical messages and different destinations, and the identical message is delivered to each of the mobile stations specified as the destination stations that receive it [0004]. An object of Ohkubo is to provide an improved multicast signal transmission power control method [0011].

In a described embodiment in Ohkubo, a reception power of a received multicast signal is measured by each of the mobile stations as being the received signal quality parameter value that is the base to determine a power control value of each mobile station, and a transmission power of the multicast signal of the base station with respect to each mobile station is controlled based on the power control value [0032]. In the transmitter 23 of the mobile station, the carrier wave is modulated in accordance with the reception power, and the transmitter 23 transmits a parameter signal, indicating the reception power as the received signal quality parameter value, to the base station 11 through an uplink 32 of the radio link [0037].

In the base station 11 of Ohkubo, the determination unit 16 determines a minimum value of the received signal quality parameter values of the parameter signals as the power control value [0042]. In the base station 11, the transmission power controller 17 controls the transmission power of the multicast signal 4 based on the power control value [0043].

With respect to the rejection of claim 1 as anticipated in view of Ohkubo, applicant respectfully requests reconsideration. Ohkubo, as mentioned above, discloses that mobile stations perform measurements on a received multicast signal [0032]. Furthermore, Ohkubo discloses sending the measurement results to the base station [0037]. According to the argument presented at section 5 of the Action, the Office asserts that sending a power measurement value to the base station is a request for either a point-to-multipoint signal or a point-to-point multicast signal. It is respectfully submitted that this interpretation is not supported by the disclosure of Ohkubo.

[1] Paragraph references are to the cited document.

More particularly, Ohkubo exclusively discloses point-to-point multicast transmissions. This conclusion becomes apparent from the definition of a multicast transmission as set forth at paragraph [0004] of Ohkubo:

> "In such multicast communications, a multicast signal is simultaneously transmitted from a base station to each of a plurality of specified mobile stations. Such multicast signals, sent by the base station, contain identical messages and different destinations, and the identical message is delivered to each of the mobile stations specified as the destination stations that receive it." (emphasis added)

Ohkubo thereby simply aims at providing a multicast signal transmission power control method for such point-to-point multicast communications [0011]. There is no indication that the introduced power control could or should be combined with a switch from a point-to-multipoint transmission to a point-to-point transmission. Thus, in Ohkubo, the mobile stations do not perform any measurements on received point-to-multipoint signals as specifically required by claim 1 (see feature A of claim 1 in the "Subject Matter of the Claims" section, above). In addition, the performed measurements do not form the basis for any switch between point-to-multipoint and point-to-point transmissions as also required by claim 1 (see feature B discussed above), since point-to-multipoint is not a considered option in Ohkubo.

It is therefore respectfully submitted that amended claim 1 is not anticipated by Ohkubo. Furthermore, since Ohkubo fails to suggest or intimate the above-recited features of claim 1, it is also respectfully submitted that Ohkubo does not suggest claim 1. It is therefore respectfully submitted that claim 1 is neither anticipated nor suggested by Ohkubo.

For similar reasons, it is respectfully submitted that amended independent claims 10 and 11 and newly submitted claims 26, 27 and 28 are also not anticipated or suggested by Ohkubo. In addition, claims 2, 5, 6, 8 and 13, all of which depend from claim 1, are further not anticipated or suggested by Ohkubo due to such dependency from claim 1.

Claim Rejections - 35 USC §103

At section 7, claim 9 is rejected under 35 USC §103(a) as unpatentable over Ohkubo. Claim 9 depends from claim 8 which in turn depends from claim 1 and it is therefore respectfully submitted that claim 9 is not suggested by Ohkubo due to its dependency from an allowed claim.

At section 8, claims 14-16 and 22 are rejected under 35 USC §103(a) as unpatentable over US patent application publication 2004/0064508, Ayyaggari, et al (hereinafter Ayyaggari), further in view of US patent 5,093,924, Toshiyuki, et al (hereinafter Toshiyuki). With respect to claim 14, the Office asserts that Ayyaggari discloses the claimed method except that it does not expressly call for: said mobile communication network estimating a link quality of a point-to-point-multipoint channel (should be point-to-multipoint channel). It is asserted that Toshiyuki teaches a mobile communication network estimating a link quality of point-to-point-multipoint channel (should be point-to-multipoint channel).

As mentioned above, claim 14 is directed to the second aspect of the present invention. As set forth at paragraph [0015] of Ayyaggari, the term "centralized network" refers to networks having a central device called a Central Coordinator to control bandwidth allocation to all devices within the network. A data communication network using power line networks that exist in homes and buildings would be one example of such a network. However, the method and apparatus disclosed in Ayyaggari are relevant to any network that have a centralized architecture with a central coordinator controlling the activity of devices in the network. As discussed at paragraph [0026] of Ayyaggari, the communication links between different devices in the network are called "channels" including a dedicated channel (D-CH).

At paragraph [0028] it is stated that a D-CH dedicated channel is a low bandwidth point-to-point bi-directional link. A contention channel (C-CH) is a point-to-multipoint channel as discussed at paragraph [0029]. Traffic channels (T-CH) can be point-to-point or point-to-multipoint channels as discussed at paragraph [0032]. In determining how to broadcast/multicast in such networks, it is disclosed in Ayyaggari that one must consider all of the channel structures available within the network. Each of the communication channels described above has its limitations and positive attributes as discussed at paragraph [0033].

In a first embodiment of a method for transmitting data as shown in Figure 3 of Ayyaggari, the source device uses the Contention Channel to transmit all devices to the network [0036]. In the alternative method for transmitting data as shown in Figures 4a-4c, the device explicitly requests the central coordinator for the establishment of a point-to-multipoint T-CH traffic channels [0043].

In another alternative method as shown in Figure 5 of Ayyaggari, the method assumes that every device has a bi-directional D-CH channel between the central coordinator and the device [0055]. In an alternative method as shown in Figure 6, once the acknowledgment of the data is generated, the central coordinator establishes a point-to-multipoint traffic channel at 132 and informs all of the destinations of the channel at 134. In an alternative embodiment, the central coordinator may establish individual, point-to-point traffic channels between it and each device [0059-0060].

Therefore, in Ayyaggari, four different methods to transmit data are discussed. In addition, a means to evaluate these four different methods for broadcast/multicast and to determine an "optimal" method becomes useful. Optimality is defined from both a network perspective and from an application perspective. From the network perspective, a broadcast/multicast transmission is said to be optimal if the bandwidth required, as defined as the number of symbols, for successful transmission is minimal. From the application perspective, a broadcast/multicast transmission is said to be optimal if the delay is minimized [0062]. With parameters of merit defined, it is possible to determine an optimal method of transmission. Governing this decision are some rules. If a device needs to transmit a signal burst or packet, then the device uses an algorithm to choose and compute the optimality metric. If a device wishes to do continuous broadcasts or multicasts, the same algorithm is used to determine the optimal method and this method is used for all of the broadcast/multicast transmissions, until key parameters such as the allocations to the T-CH or D-CH or the Pwin parameter of this C-CH change. In the event of such a change, the device or the central coordinator may re-compute the metrics and change the method if the current method proves sub-optimal [0093].

In Toshiyuki, the disclosure relates to a channel assigning method in a mobile communication system (see title). A plurality of channels are set as broadcast

control channels for use in paging in a mobile station. The mobile station switches the broadcast control channels in a predetermined set order and selects a channel having a reception level higher than a predetermined level (column 7, lines 13-20). A mobile station scans control radio channels to select a base station. The mobile station has a table representing a correspondence between each base station and codes of communication channels provided at the base station as shown in Figure 9. The mobile station measures reception levels of interference waves 4 and 5 of each communication channel listed in the correspondence table prior to other channels and records a relative value with respect to the reception level of the control radio channel (column 7, lines 37-46). When a communication connection request is generated, the mobile station selects a communication radio channel having a maximum relative value of the recorded values and measures an interference wave level of the channel. The mobile station confirms that the relative value with respect to the reception level of the control radio channel is a predetermined level or more and satisfies predetermined quality. The mobile station transmits the selected communication radio channel number to the base station by the control radio channel (column 7, lines 47-63).

The control apparatus 9 of the base station shown in Figure 2 activates the communication transmitter/receiver 8 by the communication radio channel transmitted by the mobile station and measures reception levels of the interference waves 2 and 3. The communication transmitter/receiver 8 transfers the measurement values o the control apparatus 9. If the measurement values are a predetermined value or less, the control apparatus 9 determines that the corresponding radio channel satisfies predetermined quality, performs actual assignment of the communication radio channel, and transmit the selected channel number to the mobile station, thereby starting actual communication. If the measurement values are the predetermined level or more, the control apparatus 9 determines that the selected channel is unsuitable as a communication radio channel and sends a channel selection request to the mobile station by the control radio channel (column 7, line 64 through column 8, line 13).

The Obviousness Rejection of Claim 14

With these observations concerning Ayyaggari and Toshiyuki, a review of the rejection of claim 14 is presented.

The Office considers the transmission of multicast data in a mobile communication network to be disclosed by Ayyaggari since the presented approach is believed to be of use in any network. In Ayyaggari, however, the destination of a multicast transmission also belongs to the considered network as shown in Figure 1. Thus, at most the teaching of Ayyaggari is to transmissions within a mobile communication network. In contrast, in the present application as set forth in claim 14, the destination of a multicast transmission is mobile stations and therefore the mobile stations the mobile stations do not form a part of a network as required by Ayyaggari. Thus, the specific features recited as a.1 and b as set forth in the summary of claim 14 presented above, are not fully disclosed by Ayyaggari.

In addition, the Office concedes that it is not known from Ayyaggari that a mobile communication network estimates a link quality of a point-to-multipoint channel as described by feature a of claim 14, but the Office considers this aspect to be known from Toshiyuki.

In Toshiyuki, a mobile station performs measurements on broadcast channels (control channels of several base stations) and communication channels, selects a communication channel based on these measurements and transmits an associated channel number to the base station. The base station determines based on its own interference measurements whether the selected channel is acceptable (see column 7, line 13 through column 14, line 13).

A person of ordinary skill in the art would have no motivation to combine the teaching of Toshiyuki with the teaching of Ayyaggari since the requirements on a link between a mobile communication network and mobile stations are quite different from the requirements on a link within a network. Additionally, switching between point-to-point and point-to-multipoint links on the one hand (the present application and as discussed in Ayyaggari) and selecting the best communication channel on the other hand (as disclosed in Toshiyuki) has no apparent relationship to a person of ordinary skill in the art.

Still further, Toshiyuki only discloses that a network determines the link quality of a requested point-to-point link (namely, of a particular communication channel requested by a mobile station) and does not disclose that a network determines the link quality of a point-to-multipoint link. The quality of a point-to-multipoint link is considered at the mobile station for selecting a particular communication channel, but the mobile station provides the network only the channel number for the point-to-point link and no measurement results.

It is therefore respectfully submitted that the features recited in claim 14 are not obvious in view of Ayyaggari when considered in combination with Toshiyuki. It is therefore respectfully submitted that claim 14 is allowable over the cited art.

For similar reasons, independent apparatus claim 19, which is similar to claim 14, is not suggested by Ayyaggari in view of Toshiyuki whether taken alone or in combination with Ohkubo as set forth at section 10 of the Official Action.

Similarly, newly submitted independent claim 29 directed to such an apparatus using means plus function terminology is also believed to be distinguished over the cited art.

Since independent claim 14 is believed to be distinguished over the cited art, it is respectfully submitted that claims 15-18 are further distinguished over the cited art due to their dependency from amended claim 14.

For similar reasons, mobile communication system claim 20 is also believed to be distinguished over Ohkubo in view of Ayyaggari further in view of Toshiyuki for the same reasons as those presented above with respect to claim 19. Therefore, claim 21, which depends from claim 20, is believed to be further distinguished over the cited art.

Furthermore, independent computer readable medium claim 22 is believed to be distinguished over Ayyaggari further in view Toshiyuki for the reasons presented above with regard to claim 14 since it has been amended to depend from claim 14.

In view of the foregoing, it is respectfully submitted that the present application as amended is in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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